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ABSTRACT

The career and technical education (CTE) provided in grades K-12 in the county's vocational-technical center and 12 local public school districts of Lenawee County, Michigan, was benchmarked with respect to its attention to career development. Data were collected from the following sources: structured interviews with a number of key respondents from the county's schools, employer community, and postsecondary institutions; focus groups involving 131 individuals; and review of documents from local school districts. The data were analyzed to identify the county context for career development and vocational-technical education, the nature of the county's existing vocational-technical programs, successful practices, and issues and concerns. The following are among the 10 recommendations that emerged from the benchmarking: (1) educators in the county should improve communications and marketing related to CTE and career development by replacing the term "vocational education" with "career and technical education" and eliminating use of the phrase "college-bound"; (2) CTE courses and staff must constantly "ratchet up" their standards and expectations of students; (3) programs must be made more individualized, flexible, and student-centered; (4) facilities for academic courses should be maintained; and (5) the CTE system should consider adopting a system of 10 clusters that each contain a number of career majors. (MN)

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Benchmark Analysis of Career and Technical Education in Lenawee County

Final Report

April 1999

by

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I also thank the superintendents and staffs of the local school districts and the Vo-Tech Center for their gracious hospitality in hosting my data collection visits. Everyone was quite helpful and cooperative. I very much appreciate the time and effort that they, local employers, students, and staff from the local postsecondary institutions spent in participating in my interviews or focus groups. The success of the study is very much attributable to these individuals.

I would also acknowledge the contributions of staff at the Upjohn Institute. Ms. Noyna DebBurnam provided capable research assistance, and Ms. Nancy Mack and Ms. Claire Black helped to prepare this report. Of course, the usual disclaimer applies. All errors are the sole responsibility of the author. Furthermore, all opinions expressed are solely the author's and do not necessarily represent the LISD or the W.E. Upjohn Institute for Employment Research.

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Executive Summary

The waves of dramatic technological, economic, demographic, and social change are surrounding and enveloping Lenawee County. They are bringing great challenges and great opportunities. The educational community is responsible for preparing young individuals to navigate the future to become productive and responsible adults, and so school districts bear the responsibility of helping students to cope with the changing world. This responsibility can be discharged partly through high quality career development.

The purpose of career development is to give students a broad, general awareness about work and careers to help them focus their curricular and effort choices throughout the course of their elementary and secondary education. In addition, students can explore different career options to determine their interests and aptitudes and to learn about the educational requirements of their potential career choices. Career and technical education (CTE) courses in high school and at the Lenawee ISD Vocation-Technical Center (Vo-Tech) allow interested students who choose to enroll in them to begin to acquire skills and knowledge for their career choices. Career development in school will motivate students to higher levels of achievement in all of their courses, and it will facilitate career and lifetime success after students graduate from high school.

This study is intended to benchmark the public school districts of Lenawee County with respect to their attention to career development. A particular focus of the study is the delivery of career and technical education at Vo-Tech. Established in 1970, Vo-Tech has an almost 30 year history of providing solid career and technical education courses to county students in approximately 15-20 career areas. In addition, Vo-Tech has offered quality adult education to the community and

customized training to business and industry. County educators are considering a substantial investment in Vo-Tech facilities to upgrade and equip them to better meet the needs of students who are preparing for todays' occupations, preparation that has changed significantly in most fields since the Center opened.

An investment in Vo-Tech has wide ramifications and thus should require careful and thorough planning. The LISD has contracted with the W. E. Upjohn Institute for Employment Research to conduct this study, whose purpose is to ensure that the planning process for upgrading Vo-Tech facilities is informed by current and future programmatic considerations. In addition to developing the career development benchmark for the county, the study documents significant aspects of the county's economy and labor market, and stakeholders' opinions about career development and career and technical education. Finally, the study presents the major findings and presents a number of recommendations for decisionmakers to consider as they plan and oversee the upgrading of Vo-Tech.

The Career Development and Career and Technical Education "System" in Lenawee County

Over the past few years, career awareness and career exploration activities have been integrated into elementary and early secondary curricula in the county. Most districts have a required exploratory course in careers in middle school that usually involves some type of formal assessment or inventory, and research through the Michigan Occupational Information System (MOIS). Many districts also cooperate with the Payback for Education program for middle school students. In high school, there is less uniformity across districts. Some districts have a required course, others have an elective, and still others have no specific course but rather career exploration is woven into the

curriculum of another course. There is currently a significant initiative to implement Career Pathways at the high school level in all districts in the county, an activity that is sponsored by the ISD. It should be noted that career awareness and career exploration activities are relatively inexpensive to operate, and can generally be afforded and offered by local districts if they so choose. As demonstrated with the Career Pathways initiative and other School-to-Work and Career Prep activities, the ISD, as a centralized resource, can play an important role as provider of information and facilitator of career awareness and career development activities.

The central delivery mechanism for career and technical education in the county is Vo-Tech. Its enrollment of approximately 900 students in classroom instruction means that around one-third of the juniors and seniors in the county public high schools are receiving instruction at Vo-Tech in any given semester. Actually Vo-Tech offers five types of courses. They include *classroom instruction in specific occupational areas, work-based learning (co-op and work experience), less than class size offerings at offsite locations, academic classes (CAP),* and *adult education and training.* Classroom instruction is provided in 18 one- or two-year programs.

The work-based learning programs include Co-operative Education, where the student is taking a related course, and Work Experience, where the student is not taking a related course but is receiving credit for working. In addition, Vo-Tech supports special education students in work-site activities with services referred to as Work Support Services.

When a small number of students are interested in an occupational area, Vo-Tech may arrange for a less-than class-size offering. In these arrangements, the student is employed at a business and is learning the occupational skills at the worksite. During interviews, we learned of less than class-size offerings in the areas of food service, journalism, law enforcement, pre-veterinarian, and aviation.

All together, Vo-Tech had 26 students engaged in less than class-size instruction during the first semester of 1998/99.

The Cooperative Academic Program (CAP) is an academic consortium between Britton-Macon, Deerfield, and Madison schools to offer academic classes at Vo-Tech. Courses offered include Advanced Math/Trig, Pre-Calculus, Literature/Composition, Spanish III and IV, Physics, French I and II, and Chemistry. During the 1997-98 school year, a total of 73 students participated in CAP.

Adult education and training classes include adult education, personal and professional development offerings, and customized training for business. The individuals who were interviewed for this study indicated that Vo-Tech had adult education and training offerings in many different skill areas, but they felt that Vo-Tech's primary emphasis and specialty was in business software-related courses.

Educators, in general, and proponents of career and technical education, in specific, realize that formal education cannot end in high school. An important outcome for students is interest in and appreciation for lifelong learning. An important resource to the residents of Lenawee County are the postsecondary institutions that operate there and in nearby counties. The postsecondary institutions in and around Lenawee County complement the career development of youth in the public school systems in many ways. They enroll high school students in courses on their campuses (through dual enrollment programs); they offer college credits for various Vo-Tech courses that have been formally articulated; and they are in the process of developing the ability to deliver courses through video or Internet.

Vo-Tech has formal articulation agreements in place with a number of postsecondary institutions. These agreements allow students to earn college credits and high school credits while they are taking specific programs at Vo-Tech. Twenty 1997 graduates of Vo-Tech earned a total of 166 credits at Baker College, Ferris State University, Jackson Community College, or Washtenaw Community College through their coursework at Vo-Tech.

Another resource that Lenawee County districts rely on for career development is employers. Many employers have invested time and energy into helping the public schools, and have played many roles in the career development system in the county. For example, a number of employers serve in one or more of two traditional collaborative roles: serving on career and technical education program advisory committees and supervising co-op/work experience placements.

Some less traditional ways that employers are getting involved in the career development of youth include visiting schools to help deliver career-oriented educational material (the Junior Achievement material, for example), or to provide students with information about careers and work. Employers also host student job shadowing experiences. They also host teams of middle school students through Payback for Education.

The Lenawee County Economy and Labor Market Information

The county has a diversified industrial base, with a strong manufacturing sector buttressed by the agriculture, retail trade, insurance, and services sectors. Seventeen of the county's largest 25 businesses are in manufacturing. The manufacturing base tends to be supportive of the auto industry, not surprisingly. The primary sectors are in ferrous and nonferrous metals and plastics. Lenawee County also has a number of businesses in the lower tiers of the auto supply chain (stamping,

machining, screw machine products, and tool and die making). Refrigeration equipment (Tecumseh Products, Brazeway, Inc., and Blissfield Manufacturing Co., among others) has historically played a large role in the durable goods manufacturing sector of the county's, although that role has declined over time. Wood products, however, continues to be a significant sector in addition to those mentioned previously.

All together, the labor market data that were reviewed suggested the following:

- Lenawee County has a strong durable goods manufacturing base to its economy; its base includes direct and indirect automobile suppliers, refrigeration equipment, and wood products. This sector of the labor market has slightly declined in terms of its percentage of overall employment, but is still a large and important share. Career and technical education programs in manufacturing, CAD, CNC machining, plastics, and woodworking support this sector of the economy.

- Retail trade is perhaps the fastest growing sector in the county in terms of employment and now supports almost one in five jobs. Furthermore, cashiers and sales positions are projected to have the most employment openings in all major labor markets in the area. Marketing and entrepreneurship programs serve this employment demand.

- A part of the retail sector that is growing particularly rapidly is eating establishments. Waiters and waitresses are one of the fastest growing occupations in the area. Furthermore, Washtenaw County is projecting growth in food service and lodging manager occupations. These projections imply that a food service or hospitality program would have considerable occupational demand for trained students.

- Sectors that have significant shares of the Lenawee County labor market (at least 7 percent) include health and educational services. Registered nurses, medical assistants, home health aides, emergency medical technicians, and dental hygienists are all fast growing occupations. Furthermore, the area's labor market projects show demand for secondary and special education teachers. Thus the county can show occupational demand for medical technician, dental assistant, EMT, and pre-teaching programs.

- Administrative support and clerical positions represent over one-eighth of employment in the county and secretaries are projected to be among the occupations with the most openings. This means that the business services technology and accounting programs will be training students for occupations in demand.
- Occupations related to computing and technology, such as systems analyst, computer engineer, and network administration are extremely rapidly growing.

- Personal and home care occupations are also rapidly growing. They include workers in child and elder care and cosmetologists.

- Agriculture remains an important sector in the county, which suggests the continued need for agri-science and horticulture programs.

- Some niches in the labor market include Construction (4.5 percent of Lenawee County employment and a fast growing occupation in Wayne and Monroe Counties); Corrections officers (major penal institutions in Jackson and Lenawee Counties); Entertainment and recreational services (small but fast growing sector in Lenawee); and Aviation (pilots and flight engineers are fast growing occupation in Wayne and Monroe Counties). These niches would be supported by programs in building trades, law enforcement, natural resources/recreation, and aviation.

Findings and Recommendations

The findings that are presented here represent areas of significant agreement across respondents or were clearly inferred from the interview data. They are not presented in any particular priority order, but rather they have been organized into the following categories:

- County Context for Career Development and Vo-Tech
- Nature of the Vo-Tech Programs
- What Seems to be Working
- Issues/Concerns

County context for career development and Vo-Tech

Finding #1: There is virtually a unanimous feeling that career development belongs in schools.

Finding #2: Communication flows between the LISD, Vo-Tech, and local districts are weak. Most high school teachers are unaware of the courses and content at Vo-Tech. LISD and Vo-Tech personnel assume that local districts have "bought into" certain initiatives, when in fact, they haven't.

Finding #3: Most individuals seem to be aware of the shortages in technician occupations and the decent wages and job stability that can be earned in those occupations.

Furthermore, most individuals understand that an unrealistically high percentage of parents and students are maintaining university or 4-year college aspirations.

Finding #4: Employers say that they want soft skills/good attitude and that they'll train for the technical skills. But it appears as if they do want basic technical skills–tools, terms, etc. Problem solving was the skill or characteristic that was mentioned most often as a desirable trait in students/entry-level workers.

Nature of the Vo-Tech programs

Finding #5: The logistics of Vo-Tech constrain instructional delivery. Teachers reported that they literally don't know which individuals will be in class from day-to-day, so they rely on (individualized) projects as the primary means of instructional delivery.

Finding #6: Many counselors and educators in other roles are concerned about the increase in technological skills and rigor in many Vo-Tech programs because it is making it difficult for at-risk students to succeed in those programs.

What seems to be working

Finding #7: Vo-Tech programs have a good reputation that is fairly evenly held for all areas.

Finding #8: The less than class-size offerings and the vocational student organizations are valuable extensions to the Vo-Tech curriculum.

Finding #9: The CAP program, with the "flexing" option, is well regarded by participating districts and has resulted in much higher levels of enrollment in Vo-Tech classes from those districts relative to the other nine.

Finding #10: Vo-Tech articulation agreements allow students to gain a headstart on their college careers.

Issues/concerns

Finding #11: The number of slots that are allocated to school districts is often a problem. Many staff have philosophical difficulties in trying to convince students to enroll in their second or third choices.

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Finding #12: Local educators perceive Vo-Tech as slow to change and not very flexible in program offerings, class lengths, or enrollment limits.

Finding #13: The stigma that Vo-Tech students are "losers" or "non-college-bound" seems to be dissipating. However, students, parents, and staff do not encourage attendance. The attitude has evolved to "V-T is cool if you decide to go, but it's not for me."

Finding #14: Students are concerned that taking Vo-Tech classes in 11th and 12th grade is too late. Several students noted that if you find out you don't like a field, your options have been limited.

Recommendations

The conversations with stakeholders in the county and data characterizing the county's economy and labor market were the bases for several recommendations for decisionmakers to consider. These recommendations are categorized as follows:

- Communications and marketing
- Curriculum and instruction
- Facilities
- Systemic reform

Communications and marketing

Recommendation #1: Educators in the county need to be careful about terminology. "Vocational education" should be replaced by "career and technical education." The phrase "college-bound" should be eliminated from use. The term "real world" should be replaced by "world of work" or "workplace."

Recommendation #2: Vo-Tech administrators need to reconsider their marketing and communication strategies. They might consider changing the facility's name because of its association with vocational education. Communications strategies might include a newsletter that celebrates the successes of students such as gaining articulated credit; and marketing might include high school whole staff inservices at Vo-Tech and Vo-Tech staff inservices at high schools.

Curriculum and instruction

Recommendation #3: Vo-Tech should try to be more flexible in terms of enrollment per program; class length; program starting times; and program offerings.

Recommendation #4: Vo-Tech instructors should reconsider their curricular use of work-based learning. There seems to be a philosophy of on-site instruction in the subject matter in Year I and co-op in Year II. Instructors should consider internships, externships, etc. during both years of two-year programs.

Recommendation #5: The career and technical education courses and the educational staff of local districts need to constantly ratchet up the standards and expectations of students.

Facilities

Recommendation #6: Most of the individuals who were interviewed felt that the future of education will be much more individualized, flexible, and student-centered. This suggests that facilities should focus on small, flexible work stations with access to Internet and video. Also programs that are closely related to each other should be clustered to gain flexibility.

Recommendation #7: Facilities for academic courses should be maintained.

Recommendation #8: Any upgrading of the Vo-Tech facilities needs to facilitate the adult education and training mission of Vo-Tech and the support services that Vo-Tech offers.

Systemic reform

Recommendation #9: The ISD and local districts should plan and co-ordinate their efforts to provide high quality, relevant instruction in the following four types of curriculums: career development, applied learning, career and technical education, and adult education and training. The role of the ISD should be as a participant and resource provider for career development, a resource provider for applied learning, the leader/facilitator for career and technical education, and the sole responsible party for adult education and training.

Recommendation #10: The Lenawee County career and technical education system should consider moving toward a system comprised of ten Clusters, each of which has a number of Career Majors.

Each cluster should have an introductory exploratory course that is a semester long and is offered in home schools (that may be geographically clustered). Students may take up to two such introductory courses in 9th and 10th grade. The purposes of the introductory courses are to allow students to gauge their interest in the area at an earlier stage in their high school career as well as to impart general principles that cross all of the Career Majors in the cluster.

Each cluster has developmental/remedial courses that may be offered in Summer or at night and that may not be credit-bearing. These courses would enhance skills so that students would be more likely to achieve success in the advanced Career Major classes.

Each cluster should offer one or more advanced classes in the Career Major areas (2-hour blocks). These advanced classes would require significant work-based components.

Each cluster should offer an advanced exploratory class (1 hour) for "non-majors."

The career and technical education system would be complemented by having each academic discipline offer a one-semester seminar course at Vo-Tech that is entitled Why Math? Why Science? Why English? Why Social Studies? Why Foreign Language? Why Fine Arts? These courses would be team taught by instructors in those disciplines and would include hands-on instruction, speakers from business and industry, visits to business and industry, and project-based learning.

A well-planned, collaborative investment by the educational districts of Lenawee County in a restructured system for career development and career and technical education would payoff handsomely in terms of student benefits and economic benefits to the county. It will build on an already strong system. It will provide tremendous educational and career advantages to students, and it will send a signal to potential employers that Lenawee County is serious about providing a skilled, knowledgeable work force.

1. PURPOSE AND METHODOLOGY OF STUDY

The waves of dramatic technological, economic, demographic, and social change are surrounding and enveloping Lenawee County. They are bringing great challenges and great opportunities. The educational community is responsible for preparing young individuals to navigate the future to become productive and responsible adults, and so school districts bear the responsibility of helping students to cope with the changing world. But, by its nature, education is a conservative enterprise. It is slow to change. By definition, teaching and learning are processes that impart an understanding of the world as it is or as it has been. Furthermore, students are human subjects, for whom it is natural to want to use "tried and true" techniques, not experimental innovations that may or may not work. The challenges and opportunities for Lenawee County educators, then, are to structure institutions and programs in a way that will facilitate successful entry to a changing world, but that will also not stray dramatically from the basics of teaching and learning.

A basic assumption of this study on the status of career and technical education in Lenawee County as it faces dramatic change, is the belief that the scope of public, K-12 education should include attention to career development within the context of high quality instruction in traditional curricular and co-curricular content areas. The purpose of career development is to give students a broad, general awareness about work and careers to help them focus their curricular and effort choices throughout the course of their elementary and secondary education. In addition, students can explore different career options to determine their interests and aptitudes and to learn about the educational requirements of their potential career choices. Career and technical education (CTE) courses in high school allow interested students who choose to enroll in them to begin to acquire skills and knowledge for their career choices. Career development in school will motivate students

to higher levels of achievement in all of their courses, and it will facilitate career and lifetime success after students graduate from high school.

Purpose

This study is intended to benchmark the public, K-12 districts of Lenawee County with respect to their attention to career development. A particular focus of the study is the delivery of career and technical education at the Lenawee ISD Vocation-Technical Center (Vo-Tech). Established in 1970, Vo-Tech has an almost 30 year history of providing solid career and technical education courses to county students in approximately 15-20 career areas. In addition, Vo-Tech has offered quality adult education to the community and customized training to business and industry. County educators are considering a substantial investment in Vo-Tech facilities to upgrade and equip them to better meet the needs of students who are preparing for todays' occupations, preparation that has changed significantly in most fields since the Center opened.

An investment in Vo-Tech has wide ramifications and thus should require careful and thorough planning. The LISD has contracted with the W.E. Upjohn Institute for Employment Research to conduct this study, whose purpose is to ensure that the planning process for upgrading Vo-Tech facilities is informed by current and future programmatic considerations. In addition to developing the career development benchmark for the county, the study documents significant aspects of the county's economy and labor market, and stakeholders' opinions about career development and career and technical education. Finally, the study presents the major findings and presents a number of recommendations for decisionmakers to consider as they plan and oversee the upgrading of Vo-Tech.

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An important caveat must be mentioned at the outset. The 12 districts within the county that I have visited and about which I have collected information have different needs and different resources with which to work. As a whole, the county districts have generally accepted the importance of career development, and are moving toward career pathway approaches in their secondary schools. However, districts are at different points in planning and implementing those approaches. Furthermore, districts differ by enrollment size, location and local economic health, community support, and access to technology. Thus when this report refers to the county, it is referring to an amalgam of districts with widely varying characteristics.

Methodology

The study has relied on two general sources of information. First, structured interviews were conducted with a number of key respondents from Vo-Tech, from the 12 local districts, from the employer community, and from postsecondary institutions. In fact, 131 individuals participated in interviews or focus groups. Second, documents from local districts were collected and reviewed. In many ways, the methodology underlying this study consisted of being a "camera" and taking snapshots of the opinions and experiences of stakeholders in the county. The value added of the study comes from its analysis of the information sources and opinions that were recorded to determine key commonalities and different points of view.

Structured interviews was the technique used to collect qualitative information from individuals. A structured interview form provided a kernel of questions that were identical for all respondents in a particular role, e.g. superintendents, counselors, teachers, employers, or students. This ensures that all respondents answered the same questions. But in addition, the interview sessions

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were informal enough that I was able to pursue in more detail specific topics that arose. The structured interview forms that were used in the study are available from the author upon request. The data are not available, however, because respondents were assured confidentiality.

At each of the 12 local districts, I conducted structured interviews with superintendents, high school principals (often in concert with assistant principals), one or more counselors, and two or more teachers. In addition to these respondents, I conducted focus groups with approximately six students each at three districts, and I conducted focus groups with approximately half a dozen employers each at two districts. At the Vo-Tech Center, I conducted interviews with the principal, counselor, six teachers, and I conducted focus groups with current students, recently graduated students, and employers. In addition, I interviewed by telephone, representatives of Adrian College, Siena Heights College, Jackson Community College, and Washtenaw Community College.

The secondary sources of information that I have used include annual reports, high school courses of study, enrollment projections, and "Pathways" documents from local districts. In addition, a few respondents provided documents or correspondence that helped to provide a context for understanding their particular circumstances.

This study is organized as follows. The next section will benchmark the current "system" for career development in Lenawee County. It will document the curriculum and instruction in schools and will describe the role played by external parties–postsecondary institutions and employers. The third section provides data about the economy and labor market of the county. The final section presents the study's major findings based on an analysis of the key stakeholders' opinions about career development and the Vo-Tech Center as they were captured by my structured interviews and recommendations that emanate from those findings.

2. THE CAREER DEVELOPMENT AND CAREER AND TECHNICAL EDUCATION "SYSTEM" IN LENAWEE COUNTY

Career development for any one individual is a complex process that typically involves changing directions several times and that involves considerable serendipity–being in the right place at the right time. However, conceptually career development can be thought of in a simple, straightforward model. It is composed of three elements: career awareness, career exploration, and career preparation. In formal education, *career awareness* occurs in the elementary grades as students learn at a rudimentary level what different careers involve and how jobs and careers fit into society. *Career exploration* occurs in middle grades and in the early years of high school as students begin to self-actualize themselves in careers. Schools can guide career exploration with aptitude assessments and interest inventories, curriculum units in which students research the educational requirements and possible ladders through various careers, structured job shadowing opportunities, and educational development plans (EDPs) that lay out educational and training pathways into careers of interest. *Career preparation* involves formal course work or activities to acquire the skills and knowledge needed for a particular career. Career preparation may begin in high school, but it usually occurs in postsecondary education and on-the-job training.

Over the past few years, career awareness and career exploration activities have been integrated into elementary and early secondary curricula in the county. Most districts have a required exploratory course in careers in middle school that usually involves some type of formal assessment or inventory, and research through the Michigan Occupational Information System (MOIS). Many districts also cooperate with the Payback for Education program for middle school students. In high school, there is less uniformity across districts. Some districts have a required course, others have

an elective, and still others have no specific course but rather career exploration is woven into the curriculum of another course. There is currently a significant initiative to implement Career Pathways at the high school level in all districts in the county, an activity that is sponsored by the ISD. It should be noted that career awareness and career exploration activities are relatively inexpensive to operate, and can generally be afforded and offered by local districts if they so choose. As demonstrated with the Career Pathways initiative and other School-to-Work and Career Prep activities, the ISD, as a centralized resource, can play an important role as provider of information and facilitator of career awareness and career development activities.

On the other hand, cooperation and collaboration among districts and the ISD are almost a necessity in order to offer an effective program of career and technical education for career preparation purposes. High quality career and technical education (CTE) courses with work-based learning components require much more time and resources than do the first two stages of career development. Because they impart skills and knowledge that students need to succeed in their careers, CTE courses must have up to date content and current technology. Furthermore, because they are more specific than career awareness or exploration activities, CTE courses in any one area tend to have lower enrollments. Keeping curriculum and equipment current and small class sizes cause CTE courses to be expensive relative to general education. Thus it makes sense economically for school districts to offer them in a coordinated fashion such as through Vo-Tech. Since occupational preparation typically extends past high school, it makes sense for CTE classes to be articulated with programs of study at postsecondary institutions as well. Finally, including work-based learning components in programs means that educators and employers need to interact.

Elementary Grades

This chapter summarizes my understanding of the career development "system" in Lenawee County. For the most part, the districts in the county have instituted some sort of career development activity for students at the elementary or middle school level. I did not attempt to formally collect information about elementary programs, however, so my picture is probably incomplete. The perspective I got was that career awareness activities seem to be "hit or miss" at the elementary level. Some teachers in some districts undertake activities such as Junior Achievement (JA) units, or visits or presentations by community members. One respondent indicated that there was a county curriculum initiative to develop a careers curriculum for grades K-12, but I did not learn of any specific curriculum, standards, or materials that had been developed for the elementary grades. Respondents from two districts indicated that they were well along in their curriculum planning and were ready to infuse systematic activities at the elementary level for students next year, but I did not investigate how and whether these efforts related to a countywide initiative, since I wanted to mainly focus on middle schools and high schools. The next section turns to middle school activities. That section is followed by a discussion of career development in high school and, in particular, at Vo-Tech. We end the chapter with a brief description of the roles of postsecondary institutions and employers.

Middle Schools

In general, most districts are engaged in career exploration activities in the middle grades. In many districts, 8th grade students are required to participate in career exploratories (typically 9 weeks in length) that involve research activities and, in some cases, job shadowing. The types of

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research activities include choosing one or more careers and locating information (from automated sources such as the MOIS) about their careers. In many instances, the students prepare summary reports. Job shadowing involves visiting the workplaces of individuals who are engaged in a career that is of interest to observe the daily activities of the incumbent and to learn more about the career. Most of the career classes do formal assessments of career aptitudes and interests with CAPS and COPS being a popular tool. All districts provide their 8th graders a tour of Vo-Tech, and a couple of respondents indicated that they give presentations to 8th graders by Vo-Tech students or grads.

In addition to the formal career programs, local districts offer several career- or technology-related electives to middle grade students. Virtually every district in the county offers a keyboarding/computer or technology education (Tech Lab) elective in their middle or junior high school curriculum. In addition, a number of districts have electives in career-related fields, e.g., drafting, woodworking, or graphic arts.

Many individuals that I interviewed referred to the Payback for Education program, in which a number of middle school students participate. This is a program that is not formally part of any school district, but is rather operated by a committee of community members, many of whom are educators. An adult from one district is teamed up with several middle school students from one or more other districts to conduct a visit to a business. After the visits, there is a social activity during which reflections are shared with each other about workplaces and careers.

High Schools

The high schools across the county have much more variation in their career development offerings than do the middle schools. Some schools have a required careers class; others have an

elective; still others have no formal course offering. High schools with careers classes differ in terms of the extent to which they do formal assessments. Some schools assess all students (at least one district requires the ASVAB of all juniors); others give students the opportunity to complete formal inventories or interest surveys; others have no formal assessments. Some schools require portfolios be maintained by all students; other's don't. Some schools offer a career day; while others have visitors come to the school to discuss particular careers with interested students. Interestingly, respondents seem to agree that there is a trend away from career days or career fairs. They seem to agree that the positive benefits from such activities have not been worth the attendance, deportment, and logistical problems. The trend seems to be toward more informal, small-group career exploration activities. All of the school districts participate in the ISD-led school-to-work and career prep activities. Initiatives that have been funded by these activities include work site visits/job shadows for selected students and the development of Career Pathways documents.

Some high schools offer career and technical education courses. These courses include "practical arts" electives that are essentially pre-requisites to career and technical education courses at Vo-Tech, electives in the same occupational areas, and vocationally-certified courses that parallel Vo-Tech courses. The courses offered in the high school conform to the high school's schedule, so they are shorter in "seat time" than anything offered by Vo-Tech. Among the vocationally-certified courses are Agri-Science at Sand Creek and Blissfield, and Business Services Technology at Onsted.

In addition to the career development classes and formal career and technical education classes, some high school teachers have formally integrated applied learning and career-related activities into their courses' content. For example, a chemistry teacher in Clinton does a unit on "Chemicals in Industry," which grew out of a Summer work experience program coordinated by the

ISD in which the teacher had participated. Another example is an applied math course in Addison that uses a curriculum that is built around occupational examples.

In short, career development, applied learning, and career and technical education are "alive" in Lenawee County and can be found interspersed throughout the curriculums of the high schools. Because of the wide variability that exists across the county, there may be some benefit to a study of high school career development to see if there might be a systematization or centralization that makes the offerings more consistent and more beneficial to students.

Vo-Tech

The central delivery mechanism for career and technical education in the county is Vo-Tech. Initially opened in 1970, Vo-Tech has offered a solid program of career and technical education courses for almost 30 years. Its enrollment of approximately 900 students in classroom instruction means that around one-third of the juniors and seniors in the county public high schools are receiving instruction at Vo-Tech in any given semester.

Actually Vo-Tech offers five types of courses. They include *classroom instruction in specific occupational areas, work-based learning (co-op and work experience), less than class size offerings at offsite locations, academic classes (CAP),* and *adult education and training.* Classroom instruction is provided in 18 one- or two-year programs. Note that two-year programs are designed so that students may enroll for only a single year if they so choose. The 18 programs and their lengths are as follows (I have clustered related programs):

- Agri-Science (2 year program)
- Ornamental Horticulture (2 years)

- Collision Repair (2 years)
- Auto Mechanics (2 years)

- Building & Maintenance (2 years)
- Building Trades (2 years)

- Business Office (1 year)
- Computerized Accounting (1 year)
- BST/CIS (A+) (1 year)

- Child Care (1 year)

- Dental Aide (1 year)
- Medical Services Technology (1 year)

- Drafting/CAD (2 years)
- Machine Trades (2 years)
- Welding (2 years)

- Marketing (1 year)

- Electronics (2 years)

- Graphic Design/Printing (2 years)

The work-based learning programs include Co-operative Education, where the student is taking a related course, and Work Experience, where the student is not taking a related course but is receiving credit for working. In addition, the Vo-Tech supports special education students in work-site activities with services referred to as Work Support Services.

When a small number of students are interested in an occupational area, Vo-Tech may arrange for a less-than class-size offering. In these situations, the student is employed at a business and is learning the occupational skills at the worksite. During interviews, we learned of less than class-size offerings in the areas of food service, journalism, law enforcement, pre-veterinarian, and aviation.

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All together, Vo-Tech had 26 students engaged in less than class-size instruction during the first semester of 1998/99.

The Cooperative Academic Program (CAP) is an academic consortium between Britton-Macon, Deerfield, and Madison schools to offer academic classes at Vo-Tech. Courses offered include Advanced Math/Trig, Pre-Calculus, Literature/Composition, Spanish III and IV, Physics, French I and II, and Chemistry. During the 1997-98 school year, a total of 73 students participated in CAP.

Adult education and training classes include adult education, personal and professional development offerings, and customized training for business. The individuals who were interviewed for this study indicated that Vo-Tech had adult education and training offerings in many different skill areas, but they felt that Vo-Tech's primary emphasis and speciality was in business software-related courses.

Enrollment data by district and program area give the reader a sense of the extent to which Vo-Tech serves the students of the county. Table 1 presents total enrollment in the county, and enrollment in high schools. The table shows total 1997-98 enrollment in each of the 12 districts comprising the study and enrollments in grades 9 through 12.

The 12 districts are educating approximately 18,500 students in this school year, of which about 5,600 were in grades 9 - 12. A noteworthy aspect about table 1 is the decline in enrollment during the four high school years. The last column of the table shows that the 12th grade class in the county was approximately 75 percent as large as the 9th grade class. The reasons for this decline are twofold. First, demographics explains part of it. Class sizes are partially determined by birth rates and migration patterns, which are naturally cyclical. Consequently the 9th and 10th grade classes may

Table 1. District and High School Enrollments

District	Total Enrollment	Grade 9	Grade 10	Grade 11	Grade 12
Addison	1,346	111	113	92	86
Adrian	4,372	424	352	294	254
Blissfield	1,506	145	121	120	114
Britton-Macon	492	41	38	30	38
Clinton	1,266	120	92	81	100
Deerfield	431	32	38	34	28
Hudson	1,213	97	109	97	96
Madison	986	66	52	48	42
Morenci	939	79	68	69	88
Onsted	1,780	161	162	128	111
Sand Creek	974	72	82	77	71
Tecumseh	3,193	258	254	232	202
TOTAL	18,498	1,606	1,481	1,302	1,230
Nonpublic	1,277	61	71	59	62

be larger than the older classes simply because of demographics. The other reason for the decline in enrollment between 9th and 12th grade is student dropouts (presumably at age 16). Data from the Michigan Department of Education on annual dropout rates are roughly consistent with the declines in enrollment by district. The annual dropout rates averaged for the 1995-96 and 1996-97 school years for the county districts are as follows: Addison 3.3 percent; Adrian 6.5 percent; Blissfield 4.6 percent; Britton-Macon 2.2 percent; Clinton 1.2 percent; Deerfield 0.4 percent; Hudson 4.7 percent; Madison 4.8 percent; Morenci 6.4 percent; Onsted 2.5 percent; Sand Creek 1.4 percent; and Tecumseh 3.3 percent. Note that the 12th grade column reflects 12th grade enrollment, and not graduation numbers.

The enrollment data for the Vo-Tech Center comes from a briefing guide put together by the LISD for the county principals. Table 2 breaks out first semester enrollment between Vo-Tech and

Table 2. Enrollment in Vo-Tech Courses and Work Experience, by District

District	Vo-Tech Enrollment	Co-op/ Work Experience	District Enrollment Grades 11-12	V-T Enrollment as %age of Grade 11-12
Addison	35	11	178	19.7
Adrian	170	29	548	31.0
Blissfield	9	8	334	14.7
Britton-Macon	49	5	68	72.1
Clinton	54	20	181	29.8
Deerfield	42	4	62	67.7
Hudson	42	22	193	21.8
Madison	59	5	90	65.6
Morenci	57	15	157	36.3
Onsted	84	13	239	35.1
Sand Creek	51	6	148	34.5
Tecumseh	131	13	434	30.2
Miscellaneous	35	6	---	---
TOTAL	858	157	2,532	32.5

Co-op/Work Experience for each of the districts and presents these enrollments as a percentage of enrollment in grades 11 and 12.[1]

The TOTAL row of the table shows that the Vo-Tech enrollment is equivalent to about one-third of the county's juniors and seniors. (Note that the 32.5 percent was calculated by deleting the Vo-Tech enrollment from miscellaneous schools and dividing the result by the enrollment in grades 11 and 12 in the 12 public districts in the county.) If we add in the enrollment in co-operative education and work experience, then the enrollment share for Vo-Tech grows to about 40 percent of current juniors and seniors.[2]

[1]A small number of 10th graders are enrolled at Vo-Tech, but by far and away most of the enrollment comes from students in grades 11 and 12.

[2]Note that the percentages are not necessarily equal to the percentage of all students who ever take a course at Vo-Tech or participate in Work Experience. Given the turnover in students between grades 11 and 12, it is likely (although not necessary) that the percentage of students who ever encounter Vo-Tech exceeds 40 percent.

The data in table 2 show that the CAP participant schools have, by far, the largest percentages of their juniors and seniors in career and technical education classes. On the other hand, Addison, Blissfield, and Hudson have relatively low percentages. This is not too surprising because these three districts are the furthest from Vo-Tech.

Table 3 provides enrollment trend data by program area. Note that these data come directly from the LISD briefing guide for the December 17, 1998 Principal's Meeting. The trend in most of the programs is flat because they operate at or near capacity, and that capacity has not changed over enrollment; BST/Computer Information Systems, which had a huge jump in enrollment presumably

Table 3. Five-Year Enrollment Pattern at Vo-Tech, by Program Area, 1994/95 - 1998/99

Program	94-95	95-96	96-97	97-98	98-99
Agri-Tech	29	23	40	42	48
Auto Mechanics	68	82	69	84	79
Building Trades I	57	55	51	50	53
Building Trades II	23	25	27	19	20
Building & Maintenance Services	30	38	34	39	27
BST/Computerized Accounting	29	23	36	28	32
BST/Business Office	74	75	74	77	66
BST/Computer Information Systems	22	32	34	24	41
Child Care	39	43	42	36	37
Collision Repair & Refinish	56	57	53	51	57
Dental Aide	19	26	30	26	29
Drafting/CAD	43	25*	20*	39	40
Electronics	47	19*	25*	43	38
Graphic Design/Printing	49	52	45	42	44
Machine Trades	30	26*	24*	33	38
MTP	0	40	54	6	0
Marketing	36	42	47	44	45
Medical Services Technology	22	28	31	29	41
Ornamental Horticulture	43	49	43	39	45
Welding	28	18*	15*	35	38
Less Than Class Size	0	8	12	24	26
Co-op/Work Experience	90	119	121	142	157
Work Support services	0	0	0	0	15
TOTAL	840	923	927	952	1,016

* Courses only offered in the afternoon.

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because of the A+ program; and Marketing, which has had a slow but steady increase. Programs that have downward trends in enrollment include Building and Maintenance Services, Building Trades, and Electronics.[3] The Less Than Class Size and Co-op/Work Experience programs have also grown sharply in enrollment.

The classroom instruction at Vo-Tech is done in 2 ½ hour blocks in the morning (from 9:00 am to 11:30 am) and in the afternoon from (12:00 noon to 2:30 pm). Students are transported by bus to and from their home high school, which adds roughly 30 - 60 minutes per day to their schedules. Students abide by the calendars and school activities of their home high school, and may miss class at Vo-Tech because of events that are occurring there. Vo-Tech instructors indicate that they are often not sure of which individual students will be present on any given day, and so the instruction tends to emphasize individualized projects.

Postsecondary Institutions

Educators, in general, and proponents of career and technical education, in specific, realize that formal education cannot end in high school. An important outcome for students is interest in and appreciation for lifelong learning. An important resource to the residents of Lenawee County are the postsecondary institutions that operate there and in nearby counties. Jackson Community College (JCC), Washtenaw Community College, and Monroe Community College are two-year public community colleges in counties that abut Lenawee that offer many majors in both transfer/general education areas and occupational programs. JCC operates a center in Adrian that currently operates instruction in courses that do not require a lab; however, it is upgrading that facility and will be

[3]It has been pointed out to me that some of the declines in these programs may be illusory because of the way that co-op/work experience students are counted.

offering lab courses by fall 1999. JCC has a number of courses that it offers through distance learning; however its staff feels that video courses will be of limited value in the future.

Adrian College and Siena Heights College are small four-year, private colleges in Adrian. Neither of these institutions offer applied programs such as those offered by Vo-Tech. However, both colleges see Lenawee County as their primary marketing area. Both colleges have instituted programs that allow high school students to take courses at reduced tuition rates, and both colleges are experimenting with or planning Internet courses.

Vo-Tech has formal articulation agreements in place with a number of postsecondary institutions. These agreements allow students to earn college credits and high school credits while they are taking specific programs at Vo-Tech. Twenty 1997 graduates of Vo-Tech earned a total of 166 credits at Baker College, Ferris State University, Jackson Community College, or Washtenaw Community College through their coursework at Vo-Tech.

In short, motivated students can and have earned college credits in an occupational field through articulation agreements. The postsecondary institutions in and around Lenawee County complement the career development of youth in the public school systems in many ways. They enroll high school students in courses on their campuses (through dual enrollment programs); they offer college credits for various Vo-Tech courses that have been formally articulated; and they are in the process of developing the ability to deliver courses through video or Internet.

Employers

Another resource that Lenawee County districts rely on for career development is employers. Many employers have invested time and energy into helping the public schools, and have played many roles in the career development system in the county. For example, a number of employers serve in one or more of two traditional collaborative roles: serving on career and technical education program advisory committees and supervising co-op/work experience placements. Instructors and CTE administrators organize advisory committees to get input into their curriculum and instructional methods. The educators want to be sure that the skills and knowledge that they are teaching are up to date, so they ask the advisory committee members to review course materials. Co-op/work experience opportunities allow students to gain high school credit and, in most cases, pay by working at a job site. In all cases, there is an explicit agreement between local district employees and the job site supervisor. The purpose of co-op/work experience arrangements is to give the students practical experiences that supplement the material that they are learning in a formal class (co-op) or that have educational value even though there is no formal supplemental class (work experience).

Some less traditional ways that employers are getting involved in the career development of youth include visiting schools to help deliver career-oriented educational material (the Junior Achievement material, for example), or to provide students with information about careers and work. Employers also host student job shadowing experiences. They also host teams of middle school students through Payback for Education.

Summary

All in all, Lenawee County students have access to have a well-advanced career development system and Vo-Tech facility for career and technical education. All districts have career development activities in their curriculums. Starting with elementary grades, in most districts, and continuing through programs in high schools with an evolving system of Career Pathways, districts are providing their students with career awareness, exploration, and preparation activities. The career development "system" in the public schools is enhanced by access to solid programs at postsecondary institutions and by the involvement of county employers.

The next section of this report will present a picture of the economy of Lenawee County and its labor market trends.

3. THE LENAWEE COUNTY ECONOMY AND LABOR MARKET INFORMATION

The 1996 population of Lenawee County is about 97,100 people. Population growth has been more rapid in the 90's than previously. The county's population grew by only 1.7 percent during the entire decade of the 1980's, but it grew by 6.2 percent between 1990 and 1996 (about 1 percent per year!). The preponderance of the population is white; however the minority share of the population also grew between 1990 and 1996. In the former year, blacks accounted for 1.6 percent of the county population and Hispanics accounted for 6.0 percent. By 1996, these percentages had grown to 2.2 percent and 7.1 percent, respectively.[4]

Lenawee County has a strong agricultural base that has diminished somewhat in recent years. There were about 1,260 farms in the county comprising about 336 thousand acres in 1992, the latest year for which there are published data. The number of farms dropped by about 10 percent between 1987 and 1992, although the acreage declined by only 3 percent. Note that the significantly higher population growth in the 90's has probably further decreased the number of farms and farmland since 1992.

The educational base of the county is somewhat modest. The latest data available come from the 1990 Census, which showed that 76.3 percent of the adult population (over 24) had a high school diploma or further education and 12.9 percent had a bachelor's degree or higher. These percentages are ranked 32nd and 28th out of 83 counties in the state.

The per capita income from the 1990 Census of $12,654 ranked 20th among counties in the state. The poverty rate in the county was 10.4 percent in 1989 and it crept up to 11.9 percent in

[4]The population data come from the U.S. Department of Commerce, Annual Metro, City and County Data Book, various years. The racial categories used here are from that source.

1993. Recent data from the Internal Revenue Service yield a picture of how income levels in the county are changing. Net migration was almost zero over the years 1995 and 1996. There were slightly more in-migrants[5] who moved into Lenawee County in 1995 than out-migrants, although the reverse was true in 1996. However in both years, the average income of in-migrants exceeded the average income of out-migrants. In other words, in 1995 and 1996, taxpayers who moved into Lenawee County had higher incomes than those who moved out. However, the average incomes of the in-migrants were still considerably lower than the average incomes of Lenawee County residents who didn't move in or out of the county. This implies that in-migrants are low-wage, low-income earners compared to the existing residents of the county.

The county has a diversified industrial base, with a strong manufacturing sector buttressed by the agriculture, retail trade, insurance, and services sectors. Seventeen of the county's largest 25 businesses are in manufacturing. The manufacturing base tends to be supportive of the auto industry, not surprisingly. The primary sectors are in ferrous and nonferrous metals and plastics. Lenawee County also has a number of businesses in the lower tiers of the auto supply chain (stamping, machining, screw machine products, and tool and die making). Refrigeration equipment (Tecumseh Products, Brazeway, Inc., and Blissfield Manufacturing Co., among others) has historically played a large role in the durable goods manufacturing sector of the county's, although that role has declined over time. Wood products, however, continues to be a significant sector in addition to those mentioned previously.

[5]The data refer to tax filing units, which are slightly different from families and individuals.

Labor Market

Measuring the strength and characteristics of an area's labor market is not an exact science. The concepts and statistics that are used are not always consistent, so comparisons over time or across places need to be made carefully. First of all, labor markets may vary in geography depending on the occupation or industry being considered. The labor market for a relatively small retail establishment such as a neighborhood grocery store or a fast food restaurant may be quite small–the immediate surrounding neighborhood. On the other hand, the labor market for a large manufacturing firm would be much larger, perhaps the entire county or multi-county Southeast Michigan region. For some specialized occupations, such as teacher or business professional, the labor market may be the entire state or country. For purposes of this cursory review of the labor market, we have chosen the county as the area of interest.

A second confounding factor about labor market data is that some statistics are collected from employers, and some statistics are collected from workers. Employment data as reported by employers count all workers, no matter where they reside so they include individuals who do not reside in the county. Furthermore they doublecount individuals who may hold more than one job. Statistics that are collected from workers through household surveys tend to be less accurate and also report employment in other counties if the workers commute.

In Lenawee County, it turns out that there is a net out-commute of residents. Employment levels within the county are roughly 85 percent of the labor force residing within the county. Commuting data from the 1990 Census show that there is a large net outflow of commuters to Washtenaw County, Jackson County, Wayne County, and Ohio (all counties are aggregated). There is a (much smaller) net inflow of commuters from Hillsdale and Monroe Counties, and there is an

even balance of out- and in-commuters for all other Michigan counties. The ratios of out-commuters to in-commuters for Hillsdale County, Jackson County, Monroe County, Washtenaw County, Wayne County, balance of Michigan, and Ohio (all counties) are 0.3:1, 1.6:1, 0.7:1, 7.8:1, 5.5:1, 1:1, and 2.2:1, respectively.

Two characteristics of the labor market that are often examined are employment by occupation and employment by industry. Occupational data are collected from workers since employers are typically not required to provide data other than employment totals. Industry employment may be derived from workers or employers. Note that because of the differences noted above, industry data reported by workers are unlikely to be consistent with that reported by employers. At the county level, comprehensive occupational data are only available from the decennial census, and so the most recent data would be for the year 1990. Employer-supplied employment data by industry are much more readily available because they are derived from administrative sources such as unemployment insurance tax payment data.

Table 4 shows the occupational distribution of (worker-reported) employment for 1980 and 1990. Note that these data are based on the Census of Population, and so they represent the occupation of Lenawee County residents. The employment may be outside of the county. The occupational distributions in the two years are similar; very little change occurred. The main positive trends that are shown in the table are net movement into (1) "Executive, administrative, and managerial occupations," (2) "Sales," and (3) "Service occupations, except protective and private household." All together, these occupations went from 28.0 percent of employment to 31.8 percent. The biggest growth was in the "Executive, administrative, and managerial occupations."

Table 4. 1980 and 1990 Employment of Lenawee County Residents, by Occupation

Occupation	1980 Employment	1980 Percentage of Total	1990 Employment	1990 Percentage of Total
Exec., admin., and managerial	2,840	7.83	3,808	9.36
Professional specialty	3,811	10.51	4,217	10.37
Technician and related	862	2.38	1,019	2.50
Sales	3,078	8.49	4,087	10.05
Admin. support including clerical	4,699	12.96	5,519	13.57
Private household service	160	0.44	135	0.33
Protective service	479	1.32	590	1.45
Service, exc. protective and private	4,240	11.69	5,067	12.46
Farm, fishery, forestry occs.	1,215	3.35	1,170	2.87
Precision production, crafts and repair	4,863	13.41	5,490	13.50
Machine operators, fabricators	6,722	18.53	5,895	14.49
Transportation occup. and material	1,663	4.59	1,750	4.30
handlers	1,638	4.52	1,934	4.75
Laborers, helpers and cleaners				
Total	36,270	100.00	40,681	100.00

Source: Census of Population.

The offsetting loss occurred mainly in "Machine operators, assemblers, and inspectors." This occupation went from 18.5 percent of the work force to 14.5 percent, a loss of almost 830 workers, even though the employed labor force grew by over 4,400. In short, during the 1980's, Lenawee County seemed to have followed the national trend of a transition from blue-collar occupations to white-collar and sales occupations, although the magnitude of the changes was not as significant in Lenawee as elsewhere.

Table 5 provides data on the distribution of employment by industrial sector that were also supplied by workers in the 1980 and 1990 Census. Again, the employment is outside of the county for individuals who commuted out of the county at the time of the data collection. The major trend shown in these data is a large loss of employment in "Durable manufacturing" that is offset by increases in employment in "Retail trade," "Other services," and "Health services."

Table 5. 1980 and 1990 Employment of Lenawee County Residents, by Industry

Industry	1980 Employment	1980 Percentage of Total	1990 Employment	1990 Percentage of Total
Ag., forestry, fishing	1,281	3.53	1,352	3.32
Mining and construction	1,475	4.07	1,827	4.49
Mfg. nondurable	2,705	7.46	2,909	7.15
Mfg. durable	11,376	31.36	10,330	25.39
TCPU	1,579	4.35	1,753	4.31
Wholesale trade	927	2.56	959	2.36
Retail trade	5,300	14.61	7,250	17.82
FIRE	1,358	3.74	1,625	3.99
Health services	2,428	6.69	3,213	7.90
Educational services	3,882	10.7	3,774	9.28
Entertainment and recreational services	207	0.57	527	1.30
Other services	2,953	8.14	4,214	10.36
Public administration	799	2.2	948	2.33
Total	36,270	100.00	40,681	100.00

Source: Census of Population.
TCPU: Transportation, Communications, Public Utilities
FIRE: Finance, Insurance, Real Estate

Table 6 shows employer-reported data for Lenawee County only. In this case the data represent county employment, without regard to the residence of the workers. These data show that sectors with employment growth during this period, from 1990 - 1996, were Retail trade, Services,

Table 6. 1990 and 1995 Employment in Lenawee County, by Sector

Sector	1990 Employment	1996 Employment
Labor Force	43,032	45,445
Employment, private	27,727	30,024
Manufacturing	10,723	10,734
Retail trade	5,948	6,694
FIRE	1,152	1,059
Services	7,210	8,641
Employment, public	4,854	5,674
Federal	254	238
State/local	4,000	5,436

Source: City and County Data Book.

and State/local government. Manufacturing employment held its own with employment levels that were virtually identical in 1990 and 1996. On a percentage basis, however, this represents a decline since overall private employment increased by almost 10 percent. Finance, insurance, and real estate lost employment during the first six years of the decade as did the federal government.

The final source of labor market data that was examined was from the Michigan Employment Security Agency. Table 7, taken from the LISD briefing guide for the December 17, 1998 Principal's Meeting, reports the ten occupations with the largest projected number of openings, and the ten fastest growing occupations in the South Central Michigan Works Area (includes Hillsdale, Jackson, and Lenawee Counties), Washtenaw County MWA, and the Balance of Wayne County/Monroe MWA. The lists are quite similar across all three geographic regions. The Washtenaw County list of occupations with a large number of openings is identical to the South Central Michigan list, except that it includes "Registered nurses" and "Systems analysts" instead of "Corrections officers" and "Secondary school teachers," for example. The Balance of Wayne-Monroe list is identical to the Washtenaw County list except that it includes "Mechanical engineers" and "Hand packers and packagers" instead of "Registered nurses" and "Marketing and sales, supervisors." In other words, the following six occupations were projected to have the most annual openings in all three labor markets:

- Cashiers
- Salespersons, retail
- Waiters and waitresses
- General managers and top executives
- General office clerks
- Secretaries, exc. legal and medical

Table 7. Occupations with Most Projected Openings and Fastest Growth in the South Central MWA, Washtenaw County MWA, and Balance of Wayne County-Monroe MWA

South Central MWA (includes Lenawee)		Washtenaw County		Balance of Wayne-Monroe	
Occupation	**Annual Openings**	**Occupation**	**Annual Openings**	**Occupation**	**Annual Openings**
Most Annual Openings					
Cashiers	189	Cashiers	383	Cashiers	2,805
Salespersons, retail	153	Salespersons, retail	370	Salesperson, retail	2,779
Waiters and waitresses	144	Waiters and waitresses	351	Waiters and waitresses	2,554
General managers, top execs	105	General managers, top execs	262	General managers, top execs	1,732
Corrections officers	84	Registered nurses	221	Systems analysts	1,208
General office clerks	67	Secretaries, ex legal and medical	206	Mechanical engineers	1,198
Secretaries, ex. legal & med.	59	General office clerks	192	General office clerks	1,174
Teachers, secondary school	59	Janitors and cleaners	169	Janitors and cleaners	1,086
Janitors and cleaners	59	Marketing and sales, supervisors	157	Secretaries, ex legal & med.	1,026
Marketing and sales, supervisors	53	System analysts	154	Hand packers and packagers	957
Fastest Growth					
	% growth		% growth		% growth
Systems analysts	104.30	Home health aides	133.80	Computer engineers	89.5
Home health aides	103.2	Systems analysts	109.8	Systems analysts	88.1
Lawn maintenance workers	95.2	Computer engineers	107.9	Personal and home care aides	71.6
Personal and home care aides	93.2	Personal and home care aides	91.8	Home health aides	65.8
Computer engineers	81.7	First line supervisors, construction	87.2	CNC machine operators	56.3
Bill and account collectors	70.1	Dental hygienists	65.4	Designers, ex int. designers	50.1
CNC machine operators	62.5	Medical assistants	63.7	Pilots and flight engineers	49.9
Metal molding machine setters/ops.	60.5	Telemarketers and door-to-door sales	51.4	Mechanical engineers	45.4
Emergency med. technicians	52.6	Teachers, special education	51.2	Construction managers	42.3
Medical assistants	52.3	Food service & lodging mgrs	51.2	Combination machine tool setters	42.2

Source: Michigan Employment Service Agency

The lists of fastest growing occupations also had considerable overlap. The following four occupations were projected to be among the ten fastest growing occupations in all three areas:

- Systems analysts
- Home health aides
- Personal and home care aides
- Computer engineers

The following two occupations were projected to be among the ten fastest growing occupations in two of the three areas:

- CNC machine operators
- Medical assistants

All together, the labor market data that were reviewed suggest the following:

- Lenawee County has a strong durable goods manufacturing base to its economy; this base includes direct and indirect automobile suppliers, refrigeration equipment, and wood products. This sector of the labor market has slightly declined in terms of its percentage of overall employment, but is still a large and important share. Career and technical education programs in manufacturing, CAD, CNC machining, plastics, and woodworking support this sector of the economy.

- Retail trade is perhaps the fastest growing sector in the county in terms of employment and now supports almost one in five jobs. Furthermore, cashiers and sales positions are projected to have the most employment openings in all major labor markets in the area. Marketing and entrepreneurship programs would serve this employment demand.

- A part of the retail sector that is growing particularly rapidly is eating establishments. Waiters and waitresses are one of the fastest growing occupations in the area. Furthermore, Washtenaw County is projecting growth in food service and lodging manager occupations. These projections imply that a Food Service or Hospitality program would have considerable occupational demand for trained students.

- Sectors that have significant shares of the Lenawee County labor market (at least 7 percent) include health and educational services. Registered nurses, medical assistants, home health aides, emergency medical technicians, and dental hygienists are all fast growing occupations. Furthermore, the area's labor market projections show demand for secondary and special education teachers. Thus the county can show occupational demand for medical technician, dental assistant, EMT, and pre-teaching programs.

- Administrative support and clerical positions represent over one-eighth of employment in the county and Secretaries are projected to be among the occupations with the most openings. This means that the Business services technology and accounting programs will be training students for occupations in demand.

- Occupations related to computing and technology, such as systems analyst, computer engineer, and network administration are extremely rapidly growing.

- Personal and home care occupations are also rapidly growing. They include workers in child and elder care and cosmetologists.

- Agriculture remains an important sector in the county, which suggests the continued need for agri-science and horticulture programs.

- Some niches in the labor market include Construction (4.5 percent of Lenawee County employment and a fast growing occupation in Wayne and Monroe Counties); Corrections officers (major penal institutions in Jackson and Lenawee Counties); Entertainment and recreational services (small but fast growing sector in Lenawee); and Aviation (pilots and flight engineers are fast growing occupation in Wayne and Monroe Counties). These niches would be supported by programs in building trades, law enforcement, natural resources/recreation, and aviation.

4. FINDINGS AND RECOMMENDATIONS

Framework

In interpreting the findings and recommendations of this study, the reader needs to keep in mind the distinctions between four different, but related, types of curriculum. The educational offerings at Vo-Tech serve a role in all four. First of all, the *formal career development curriculum offered by districts in the county* pertains to the K-12 curriculum offerings whose purpose is to address the career development of students. Career development comprises career awareness, career exploration, and career preparation. Second, the *applied learning curriculum* represents those units or courses that use "hands-on" applications to engage learners and re-enforce content areas. Third, *career and technical education* comprises the curriculum intended to impart specific, technical skills and knowledge that will be needed to find gainful employment and ply one's occupation. It may be thought of as the career preparation phase of career development. While technical skills and knowledge are imparted, this curriculum also integrates academic skills and employability skills. The fourth type of curriculum is *adult education and training* for individuals who have completed or left high school. It may involve basic academic skills and knowledge, technical skills acquired to find employment, technical skills and knowledge to upgrade one's ability to be more productive in one's current employment situation, or education and training taken for other reasons.

In some interviews, I got the impression that some individuals felt that Vo-Tech was responsible for and the (only appropriate) place for all four of these curriculums. This was not the consensus opinion, but it would be beneficial for county educators to address specifically who should be responsible for each of these curriculum functions and to address how Vo-Tech fits into each of them.

With this framework in mind, the final section of the report enumerates the major findings of the study. The major findings are facts or inferences made from the observations of a number of individuals across the districts or that were derived from interviews. Following the discussion of major findings, the section ends with some recommendations for Lenawee County educational decisionmakers to consider. Recommendations represent this evaluator's opinions about actions or policies that should be pursued. In general, the recommendations are derived from the major findings.

Major Findings

The findings that are presented here represent areas of significant agreement across respondents or were clearly inferred from the interview data. They are not presented in any particular priority order. But they have been organized into the following categories:

- County Context for Career Development and Vo-Tech
- Nature of the Vo-Tech Programs
- What Seems to be Working
- Issues/Concerns

County Context for Career Development and Vo-Tech

The first set of findings concern the general context in the county for career development and career and technical education.

Finding #1: There is virtually a unanimous feeling that career development belongs in schools.

One of the underlying assumptions of this study, as mentioned at the outset of this report, is that career development is an appropriate function of the public K-12 system. This assumption is sometimes seen as being controversial, particularly from individuals who see education solely as an institution that should impart academic skills and a love of learning. However, in my interviews,

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almost everyone agreed that attention needs to be paid to career development and almost everyone was working hard to enhance and improve the career development activities that were going on in their schools. It should be noted that one employer who was interviewed indicated that he believed that the role of schools was to impart basic academic skills and that schools should not be engaged in career development. But at least among the educational community, there was a consensus on the desirability of some attention to careers in the formal school setting.

> *Finding #2: Communication flows between the LISD, Vo-Tech, and local districts are weak. Most high school teachers are unaware of the courses and content at Voc-Tech. LISD and Vo-Tech personnel assume that local districts have "bought into" certain initiatives, when in fact, they haven't.*

In one of my interviews, I was asked the following question: "Kevin, you have probably heard a lot of grumbling and complaints, but don't you really feel like everyone in the county is ***on the same team***?" The answer is no. High school education is highly decentralized; teachers tend to focus on their content areas and staff tend to focus on what's going on in their own building. Furthermore, local districts operate from a premise of local control, and so there is a natural competition among districts that is fostered by athletic rivalries. Furthermore, the schools of choice policy is causing districts to be competitive with each other.

Intellectually, local district personnel realize the benefits of the resource sharing of an intermediate school district; but when there are costs and inconveniences involved, local districts seem to resent having to give up some control to the ISD. This means that Vo-Tech has three significant barriers to communication and cooperation to overcome in its interactions with local districts–unrelated content area, presence outside of the district, and affiliation with the ISD.

> *Finding #3: Most individuals seem to be aware of the shortages in technician occupations and the decent wages and job stability that can be earned in those occupations.*

Furthermore, most individuals understand that an unrealistically high percentage of parents and students are maintaining university or 4-year college aspirations.

The Lenawee County educators and employers are well aware of the statistics on college completion that show that around 60 - 70 percent of high school graduates enter a postsecondary program, but only 25 - 30 percent actually graduate with a baccalaureate degree. Parents and students have accepted the notion that "(4-year) college" is the only desirable pathway to a career and so a very high percentage of students aspire to attend such an institution. Some of the respondents in my study suggested that teachers and administrators tend to perpetuate this notion because all of them attended and completed college.

The perpetuation of this aspiration seems to be dissonant with another set of well-accepted facts, which are that there currently is a huge shortage of skilled technicians/tradespeople and individuals in those occupations earn high wages and have job stability. One respondent noted, "My father is a skilled tradesman, and in 40 years in the labor force, he was never down-sized."

Finding #4: Employers say that they want soft skills/good attitude and that they'll train for the technical skills. But it appears as if they do want basic technical skills – tools, terms, etc. Problem solving was the skill or characteristic that was mentioned most often as a desirable trait in students/entry-level workers.

The focus groups with employers often turned to a discussion of the tightness of the current labor market and the difficulty in finding good workers. In this environment, employers noted that they could not afford to screen applicants on the basis of their technical skills, but rather they tried to focus on attitude and attendance and other "soft skills." However, when I probed a little bit, I found that employers still expected some basic technical skills and knowledge from workers, even in this tight labor market environment. For example, employers expected entry-level workers to know rudimentary job-specific terminology and to have some background in basic tools of the trade.

It was interesting that there was a consensus among employers in this study that problem solving/critical thinking had become a highly valued skill. Employers noted that work is more and more decentralized and autonomous and they need individuals who can solve easy problems that may arise. Furthermore, inventories are smaller and smaller, so it is critical to solve problems quickly.

Nature of the Vo-Tech Programs

The next set of findings pertain to the specific nature of the programs that are offered at Vo-Tech.

Finding #5: The logistics of Vo-Tech constrain instructional delivery. Teachers reported that they literally don't know which individuals will be in class from day-to-day, so they rely on (individualized) projects as the primary means of instructional delivery.

The Vo-Tech classes draw on students from multiple districts, and these students abide by the schedules of their home schools. Consequently, a number of students may have excused absences on any given day because of weather problems, alternative school-wide activities in their home school, college visits, and so forth. A key characteristic of Vo-Tech classes is that they are hands-on, applied subjects, so it is appropriate for the instruction to be project-based or, at least, individualized. But the logistics make it difficult to team the students and work on group projects.

Finding #6: Many counselors and educators in other roles are concerned about the increase in technological skills and rigor in many Vo-Tech programs because it is making it difficult for at-risk students to succeed in those programs.

Many respondents felt that a major benefit to career and technical education classes was the fact that some students, who haven't previously done well in school, could achieve success. Vo-Tech programs are becoming more challenging and more technologically-based, however, because the nature of work, in general, is becoming more complex and reliant on technology. For example, student in Collision Repair sometimes need to search the Internet for parts. Auto Mechanics

Technology students must become trained in analyzing extremely complex equipment. Guidance counselors, in particular, have become aware of this trend, and are concerned that it has become more and more difficult for at-risk, low achieving students to find success in the Vo-Tech programs.

What Seems to be Working

The next set of major findings reflect respondents' opinions about the positive aspects of Vo-Tech, or in other words, what they feel is working.

Finding #7: Vo-Tech programs have a good reputation that is fairly evenly held for all areas.

All of the respondents were asked for their opinion about the programs at Vo-Tech and whether they felt any of them were exemplary, i.e., "head and shoulders" above the others. ***Every single program*** at Vo-Tech was mentioned at least once by someone. Furthermore, no one mentioned any program as being below standard. It is very clear, from an outsider's perspective, that educators see benefits to all of the Vo-Tech programs and generally feel that the programs are of substantial quality.

Finding #8: The less than class-size offerings and the vocational student organizations are valuable extensions to the Vo-Tech curriculum.

All of the individuals who were interviewed were asked for their opinions about which programs at Vo-Tech were exemplary and why. Oftentimes, the response was that the less than class size offerings were extremely valuable because of their flexibility to meet the needs of a small number of students and because they were "delivered" at a worksite. Also, a number of individuals referred to the vocational student organizations, e.g. DECA, HOSA, FFA, as a valuable benefit to Vo-Tech

students. The activities and competitions that these organizations hold impart academic skills and "real world" experiences, such as traveling to competitions.

Finding #9: The CAP program, with the "flexing" option, is well regarded by participating districts and has resulted in much higher levels of enrollment in Vo-Tech classes from those districts relative to the other nine.

The respondents from the three districts that participate in the Cooperative Academic Program (CAP)–Britton-Macon, Deerfield, and Madison–were extremely happy with the program and the extended opportunities that it provided their students. In particular, they liked the opportunity of having their students "flex" into Vo-Tech classes. In other words, during the block of time that these districts' juniors and seniors are at Vo-Tech, they are able to sign up for a career and technical education class, to take academic offerings only, or to take one or two academic classes and use the other class period to join a career and technical education class for part of the block. The latter option is referred to as "flexing." While it is a nice opportunity for students, it should be recognized that it requires instructional flexibility also.

Finding #10: Vo-Tech articulation agreements allow students to gain a headstart on their college careers.

The availability of gaining articulated credits in some programs is a benefit of Vo-Tech that is virtually unknown in the county. Only one superintendent and one or two principals were aware of this opportunity. Very few teachers and no current students who were interviewed were aware of articulated credit through the Vo-Tech. Most of the guidance counselors, on the other hand, were familiar with articulation and knew which programs had agreements with which institutions. Statistics showed that 20 of the county's 1997 high school graduates earned 166 college credits through articulation.

Issues/Concerns

The final set of findings are raised as areas of concern about Vo-Tech programs or logistics.

Finding #11: The number of slots that are allocated to school districts is often a problem. Many staff have philosophical difficulties in trying to convince students to enroll in their second or third choices.

Because of space limitations, Vo-Tech allocates enrollment in programs across districts by a system of "slots." Space in programs is apportioned according to size of the district. Consequently when students sign up for classes they are asked for up to three program choices. Obviously, districts have a problem if more students sign up for programs than the number of "slots" that they have. In fact, a number of districts indicated that this was a significant constraint or barrier to increasing their Vo-Tech enrollments. Districts generally give Vo-Tech high marks for communicating with counselors and opening up enrollment to those districts with excess demand, if there are unused "slots" from other districts. However, many staff felt that the Vo-Tech staff were not very realistic or understanding about how difficult it is to get students to enroll in their second or third choices.

Finding #12: Local educators perceive Vo-Tech as slow to change and not very flexible in program offerings, class lengths, or enrollment limits.

It appears as though Vo-Tech operates administratively as follows. Its millage rate and county SEV determine an operating budget. That budget can only support a limited number of programs and services. So in order to maintain high quality and to rationalize equipment investments, Vo-Tech maintains a stable number of programs, relies mainly on full-time staff, and limits class sizes. The result of this method of operating is that Vo-Tech appears to experience little change and to have little flexibility. It should be noted that the less-than-class-size offerings are a way that Vo-Tech is responsive and flexible.

The staff in local districts that were interviewed felt that more flexible operating models are feasible, such as adding sections if there were additional demand, developing additional courses if there were enough student interest, and varying starting times and class lengths to meet the needs of students and local districts. A comment made by virtually every teacher and principal is that local staff felt like they were constantly altering plans for special events, field trips, speakers, inservices, and so forth to accommodate the students who attended Vo-Tech, who accounted for perhaps 10 to 20 percent of their high school student body (grades 9 - 12). This perspective was shared by individuals who were, in general, very supportive of Vo-Tech.

> *Finding #13: The stigma that Vo-Tech students are "losers" or "non-college-bound" seems to be dissipating. However, students, parents, and staff do not encourage attendance. The attitude has evolved to "V-T is cool if you decide to go, but it's not for me."*

The stereotypical image of Vo-Tech students was a discussion item that many individuals had an opinion about, and that took a considerable share of interview time. It seemed to be a consensus that historically, vocational education students were stereotyped as "non-college bound" or "dummies" who couldn't make it in core academic classes. There was a split among respondents as to whether that stereotype still existed, however. Some respondents were very outspoken that it did still exist and that the stereotype was a significant impediment to increasing Vo-Tech enrollments. On the other hand, many respondents felt that the image had changed over time, so that there is now less of a stigma attached to attending Vo-Tech. But when I explored further the opinions of the latter individuals, I got a sense that they believed that the stigma had declined, but that the stereotype still existed. The attitude today seems to be that students, parents, and staff understand the value of career and technical education, and they don't "put down" individuals who attend Vo-Tech. However, career and technical education is still not seen as a desirable option to be encouraged.

Compounding the obstacles that poor student image places on encouraging students to enroll in career and technical education classes is an attitude on the part of some building administrators that they don't want their best students to leave the building. These building administrators were concerned about losing their best students for a large part of the day because they felt that these students had relatively few behavioral problems and were positive role models for 9th and 10th graders. This attitude struck me as somewhat unreasonable. First of all, it is doubtful that all of the best students would leave the building at the same time. Second, the students would presumably enroll in classes at Vo-Tech only if they felt that the classes would be beneficial to them. If that were the case, then the building administrators are not putting the students' best interests first if they discourage this enrollment.

> *Finding #14: Students are concerned that taking Vo-Tech classes in 11th and 12th grade is too late. Several students noted that if you find out you don't like a field, your options have been limited.*

Many individuals recognize that career and technical education courses will have value if students learn that they do not want to pursue a particular career option. Time and time again, I heard anecdotes about students who found out that a particular field was not for them. In their focus groups, students agreed with this potential benefit, but their perspective was somewhat different. They were concerned that many career options would be foreclosed if they discovered in grades 11 or 12 that they were not suited for an occupation. They indicated that they would tend to encourage experimentation earlier in high school if that were possible.

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Recommendations

The conversations with stakeholders in the county and data characterizing the county's economy and labor market were the bases for several recommendations for decisionmakers to consider. These recommendations are categorized as follows:

- Communications and marketing
- Curriculum and instruction
- Facilities
- Systemic reform

Communications and marketing

The participation in and impact of career development activities and career and technical education are shaped greatly by the perceptions (and misperceptions) of stakeholders. As alluded to above, many individuals understand the wage and stability benefits that are inherent in skilled trades and technician occupations, and yet there is a shortage of workers and students. Many individuals understand that four-year colleges and universities turn out to be the wrong choice for a large share of students, and yet that is exactly the aspiration of most students and parents. An entire finding above was devoted to a perceptual stereotype. Effective communication may ameliorate common and widely-held misperceptions.

> ***Recommendation #1: Educators in the county need to be careful about terminology. Vocational education should be replaced by career and technical education. The phrase "college-bound" should be eliminated from use. The term "real world" should be replaced by "world of work" or "workplace."***

For adults, the phrase vocational education conjures up a perception of what took place in shop and home economics classrooms when they were in high school. The parallel classes of today are vastly different. Academics have been integrated. Collaboration with business/industry/labor and with postsecondary institutions occurs. Work-based learning is recognized as a valuable instructional

delivery mechanism. Technology is pervasive. Yet most of the high school courses of study documents, and many of the district annual reports use the phrase "vocational education." Career and technical education (CTE) is an alternative that should be considered.

Classifying some students as "college-bound" and the rest as "non-college-bound" seems divisive and wrong. Many respondents used the phrase to indicate that Vo-Tech students were not "college-bound." The fact of the matter is that virtually all individuals will need to participate in some sort of postsecondary education or training to be successful. All students need to be of the mindset that they will participate in further education. Therefore Pathways documents should ask students what further education they plan to attend rather than "Do you plan to attend?"

Finally, many respondents indicated that they liked Vo-Tech or career and technical education classes because they gave students a sense of the "real world." This implicitly demeans education as the "imaginary world" or the "unreal world." Students need to learn that "schools" and "workplaces" are different environments that require different behavior. The joy of learning or figuring out a problem in school is just as "real" as producing a product or service and satisfying a customer.

> *Recommendation #2: Vo-Tech administrators need to reconsider their marketing and communication strategies. They might consider changing the facility's name because of its association with vocational education. Communications strategies might include a newsletter that celebrates the successes of students such as gaining articulated credit; and marketing might include high school whole staff inservices at Vo-Tech and Vo-Tech staff inservices at high schools.*

Because communication is such an important function in the operation of collaborations such as Vo-Tech, administrators should be constantly evaluating and changing, as necessary, their communication and marketing strategies. Many local district staff made the comment that recent years' visits by Vo-Tech staff to high schools have been "preachy" and have emphasized potential earnings in skilled trades occupations to the exclusion of education and general interest motivations.

Local districts also expressed some dissatisfaction with Vo-Tech's inflexibility about the dates for sophomore visitation scheduling.

Vo-Tech might consider a name change at the same time it upgrades facilities. Vo-Tech has very high name recognition, but that has disadvantages as well as advantages. How about the Center for Career Development and Applied Learning (CDAL)?

Newsletters that get widely disseminated may be a useful communication and marketing tool. One superintendent said, "We always celebrate student achievements such as college scholarships; why shouldn't we be just as celebratory of apprenticeships or successful placements?" A newsletter might be one way to achieve that goal.

One district reported having its full high school staff visit Vo-Tech on an inservice day. Staff there felt that it had been a very valuable inservice as well as the "single, best" event to educate staff about programs and instruction at Vo-Tech, how rigorous they are, and how they have changed. A superintendent in another district took his entire school board to Vo-Tech and reported that it was the "single, best" thing he has done with his board.

Curriculum and instruction

The next three recommendations deal with the career and technical education and career development curriculum and instructional delivery.

Recommendation #3: Vo-Tech should try to be more flexible in terms of enrollment per program; class length; program starting times; and program offerings.

Among the major findings was the sense of the education community that Vo-Tech was a very slow-changing, inflexible institution. All parties need to realize that Vo-Tech cannot be all things to all people, and that there are some directions that it should choose to move into, and others that it

should avoid. Resources are limited. Not all students will benefit from the programs that Vo-Tech offers. However, it is difficult to overemphasize the pervasiveness of the perception of inflexibility.

We did not investigate thoroughly the impediments to change at the Vo-Tech, but it would seem as though neither staff availability nor financial resources should be insurmountable barriers. With the proximity of several community colleges and four-year institutions, and with local districts that have fiscal difficulties in offering full curriculums, there should be many individuals available who could expand the staff. Given that local districts get the full foundation grant for students who attend Vo-Tech and that Vo-Tech is supported by a local millage, there should be adequate funds to offer more programs. Of course, this may mean that local districts would have to begin to support the Vo-Tech operation, but that is only appropriate since it is the local districts who want the needs of their students met.

> *Recommendation #4: Vo-Tech instructors should reconsider their curricular use of work-based learning. There seems to be a philosophy of on-site instruction in the subject matter in Year I and co-op in Year II. Instructors should consider internships, externships, etc. during both years of two-year programs.*

As we examined data and programs in the county, it appeared as if a major challenge that the county faced in its pursuit of the highest quality career and technical education programs was the underdevelopment of work-based learning opportunities. The less than class size offerings demonstrate the value of work-based learning. But the full-time classroom programs could also be offered on site (at least part of the semester), and could require internships or mentorships. to supplement the formal instruction. Considerable effort is required to make work-based learning opportunities (including co-ops) beneficial to students. Classroom teachers need to interact with business to design curricular interventions that re-enforce the skills and knowledge being taught in

the classroom. But if the county's programs can get to a point where a significant portion of students have work-based experiences that have been jointly designed and coordinated by educators and employers to re-enforce academic and employability skills, they will greatly enhance the quality of the students' education and motivation.

Recommendation #5: The career and technical education courses and the educational staff of local districts need to constantly ratchet up the standards and expectations of students.

This recommendation is made because most of the students made comments that classes at Vo-Tech were seen as "easy" and "not challenging." Some of this perception may be overcome by publishing course learning objectives in the high schools' description of courses; and of course, this perception may be overcome by ratcheting up student expectations.

Along the same lines, but in a different context, many counselors and high school staff were concerned by rather low occupational aspirations of students. More than once, teachers said that their students seemed to set their sights too low. "Top ten" students tended to aspire to being nurses or medical technicians rather than physicians, for example. They tended to aspire to being mechanics rather than engineers. Obviously realistic expectations are better than unrealistic expectations, but the sense I got was that teachers and staff felt like they were not "pushing" enough in the area of career aspirations.

Facilities

The impetus for this study was in conjunction with plans to upgrade the Vo-Tech facilities and equipment. Consequently, recommendations that might influence those plans are particularly germane. Many respondents had opinions on subjects that would have implications for facilities.

Recommendation #6: Most of the individuals who were interviewed felt that the future of education will be much more individualized, flexible, and student-centered. This suggests that facilities should focus on small, flexible work stations with access to Internet and video. Also programs that are closely related to each other should be clustered to gain flexibility.

Part of the interviewing process involved asking respondents to reflect on trends in education and forecast future trends. The preponderance of answers suggested that future high school education will be less constrained by time and place. In their view, students will be able to supplement core courses with elective courses in areas that are particularly interesting to the students or important for their career plans that are delivered by technology. Furthermore, employers noted that occupational skills required in jobs change frequently. For example, in health care, technicians are expected now to be generalists rather than to have specialities such as radiology, physical therapy, immunology, and so forth. If both of these trends continue, then it makes sense for Vo-Tech to aim toward, small, flexible work stations that have access to the latest technology. Clustering of occupational areas is also indicated, so that changing emphases in a general area can be accommodated easily.

Recommendation #7: Facilities for academic courses should be maintained.

As noted, the districts that are participating in CAP are quite satisfied with the arrangement. Thus it makes sense for Vo-Tech to maintain appropriate instructional stations for these academic courses. Furthermore, the systemic reform to the county's career and technical education curriculum that is suggested below includes niche courses in academic areas. If this idea has merit, then there will be further justification for maintaining an adequate number of general classrooms.

Recommendation #8: Any upgrading of the Vo-Tech facilities needs to facilitate the adult education and training mission of Vo-Tech and the support services that Vo-Tech offers.

This study has focused mainly on the public K-12 system in the county, but Vo-Tech has served adults through adult training opportunities and customized training for business and industry. Many individuals noted that these are important functions that have been valuable to the community.

In addition, Vo-Tech has support services that it offers to students that require appropriate facilities and equipment. For example, respondents from local districts were pleased that a counselor position had been filled at Vo-Tech after being vacant for a few years. In a focus group with students who had graduated recently, all of the young people were pleased with the placement support at Vo-Tech. Also, many individuals pointed to the support services that Vo-Tech provided to special education students.

Systemic reform

The last two recommendations are intended to be thought-provoking and wide-ranging suggestions about how the career and technical education system in the county might be reformed. They stem from a consideration of the findings that have been elucidated above, and from a consideration of the county labor market needs.

> *Recommendation #9: The ISD and local districts should plan and co-ordinate their efforts to provide high quality, relevant instruction in the following four types of curriculums: career development, applied learning, career and technical education, and adult education and training. The role of the ISD should be as a participant and resource provider for career development, a resource provider for applied learning, the leader/facilitator for career and technical education, and the sole responsible party for adult education and training.*

Table 8 provides a schematic representation of the framework that is used for this study. The first row of the table shows who should be responsible for each curriculum. The second row shows the role of the ISD/Vo-Tech staff, and the bottom row shows the desired output for each curriculum.

Table 8. Framework for Findings and Recommendations

	Formal career development curriculum	Applied learning curriculum	Career and technical education curriculum	Adult education and training curriculum
Who is responsible?	Districts and Vo-Tech counseling staff	District curriculum developer	Vo-Tech and district applied education staff	Vo-Tech
What is role of LISD?	LISD is resource and supports/facilitates (STW, Tech Prep, Career Prep)	LISD is resource (STW, Tech Prep, Career Prep)	LISD/Vo-Tech is leader	LISD/Vo-Tech is responsible
What is product of county-wide collaboration?	Systematic, county-wide K-12 curriculum	County-wide clearinghouse for materials	Systematic, county-wide K-12 curriculum, mainly 9-12	Flexible offerings, that meet needs

Counseling staff in the districts and at the Vo-Tech should take the lead in developing and enhancing the scope and sequence of the career development curriculum for all grades K-12. Recognizing that local districts have the final responsibility for determining the curriculum content in their schools, ISD resources and leadership should nevertheless be the catalyst in planning a coordinating all areas of a career development curriculum.

By its nature, virtually all career and technical education pedagogy relies on applied learning. However, staff in all content areas in all districts should be aware of applied learning opportunities that could be exploited in their subject area classes. Vo-Tech instructors and facilities should be valuable resources to teachers who are interested in making applied learning available to their students; however, the responsibility for infusing applied learning into curriculums lies with local teaching staff. A desirable outcome for the county to aim for would be a clearinghouse for materials that support applied learning.

Career and technical education staff at the Vo-Tech and in the districts should obviously be responsible for that part of the curriculum. It should be recognized that the Vo-Tech is the primary facility for offering career and technical education classes, but also it should be recognized that local districts play an important role in offering developmental or pre-requisite classes that need to be articulated with the Vo-Tech offerings.

The local districts play only a minor role in the provision of adult education and training and thus this curriculum needs to be developed by the Vo-Tech staff, in collaboration with community, postsecondary institutions, and business leaders.

> *Recommendation #10: The Lenawee County career and technical education system should consider moving toward a system comprised of 10 Clusters, each of which has a number of Career Majors.*

Each cluster should have an introductory exploratory course that is a semester long and is offered in home schools (that may be geographically clustered). Students may take up to 2 such introductory courses in 9th and 10th grade. The purposes of the introductory courses are to allow students to gauge their interest in the area at an earlier stage in their high school career as well as to impart general principles that cross all of the Career Majors in the cluster.

Each cluster has developmental/remedial courses that may be offered in Summer or at night and that may not be credit-bearing. These courses would enhance skills so that students would be more likely to achieve success in the advanced Career Major classes.

Each cluster should offer one or more advanced classes in the Career Major areas (2-hour blocks). These advanced classes would require significant work-based components.

Each cluster should offer an advanced exploratory class (1 hour) for "non-majors."

The career and technical education system would be complemented by having each academic discipline offer a one-semester seminar course at Vo-Tech that is entitled Why Math? Why Science? Why English? Why Social Studies? Why Foreign Language? Why Fine Arts? These courses would be team taught by instructors in those disciplines and would include hands-on instruction, speakers from business and industry, visits to business and industry, and project-based learning.

Any major enhancement of the career and technical education system should build on the strengths of existing programs and facilities, and should be tailored to the skills needed in the Lenawee County labor market. This final recommendation suggests an approach that districts might consider. Two operating characteristics that would need to be applied if the recommended system were to be implemented would be (1) to build in flexibility so that students could move between clusters and majors without great penalty should their interests change, and (2) to develop a system that complements, but does not compete with, the fine postsecondary institutions that are easily accessible to county residents.

The recommendation that is being offered is to develop a series of occupational clusters that offer world-class curriculums in several majors within the clusters. All districts and the ISD would participate in the system through a consortium arrangement. The Vo-Tech Center would offer some

parts of the system, but much of the instruction would be done in local high schools and businesses on a satellite basis. Local districts would continue to accept the responsibility of transporting their students to other schools or work sites for programs not offered locally.

Each cluster would have an active cadre of employers, and would locate at least one work-site classroom for formal instruction in the field. Flexibility would be enhanced by having open enrollment for any student in the county and by having a minimum of prerequisites. The clusters and majors that are suggested follow:

- Cluster: Allied Health Systems

  Career Majors: health technicians, med-tech, dental aide, pre-vet, EMT

  This cluster would expand on the current health offerings, but would attempt to attract students who would be interested in becoming medical doctors, veterinarians, etc. Potential employer partners would include hospitals, clinics, physicians, dentists, vets, etc.

- Cluster: Communications and Fine Arts

  Career Majors: printing/graphic arts, journalism, radio and TV, LAN/WAN networking, performing arts, theater technician

  This cluster would attract students with and interest in journalism, fine arts, or computer networking. Potential employer partners would include radio and TV stations, fine arts facilities at Adrian College and Siena Heights, newspapers, printing businesses.

- Cluster: Construction and Skilled Trades

  Career Majors: building trades, masonry, plumbing, electricians, HVAC, woodworking/cabinetry, building maintenance

  This cluster would build on the successful building trades and building maintenance programs offered by Vo-Tech. It would upgrade the instruction in the individual building trades to full course offerings. Potential employers would include contractors, plumbers, masons, wood products manufacturers.

- Cluster: Education/Human Services

Career Majors: pre-education, pre-law, child care, protective services, cosmetology

Child care is currently offered, but many students want to enter teaching, law, or protective service occupations. For example, this cluster would accommodate students who are interested in becoming teachers by offering supervised classroom experiences. Also protective services is an occupation that has a fair number of openings in the labor market and might attract a number of students. Potential employer partners would include the school districts, law enforcement, penal institutions, attorneys, child care establishments, cosmetology practitioners.

- Cluster: Electrical Engineering/Networking

  Career Majors: electronics, machine office equipment repair, computers--hardware and software

  The intent of this cluster would be to establish a pre-engineering focus for students particularly interested in electronics. The main focus would be on hardware. Potential employer partners would be computer repair businesses, electronics repair, manufacturers of electronics components.

- Cluster: Finance and Management

  Career Majors: business services technology, entrepreneurship, accounting

  This cluster would build upon the county's existing strength in its BST programs and enrollments. But it would fold in entrepreneurship and finance. Potential employer partners would include banks, insurance agents, accountants, real estate brokers, and large businesses with administrative assistant/clerical positions.

- Cluster: Manufacturing Systems

  Career Majors: pre-engineering, MTP, plastics, materials, CAD/drafting, welding, CNC machining

  This cluster would be similar to the Vo-Tech's MTP program as well as to build on the solid CAD course. It would attract students interested in mechanical or industrial engineering. Potential employer partners would include manufacturers and engineering concerns.

- Cluster: Agri-Science and Natural Resources

  Career Majors: agri-science, horticulture, environmental protection, parks and recreation

The county has a strong agricultural base and agri-science and horticulture programs. This cluster would build on those programs, but is intended to also attract students who are interested in outdoors-type occupations. Recreational services is a fast-growing occupation. Potential employers would include agricultural producers, nurseries/greenhouses, county parks and recreation department, recreation industry such as golf courses.

- Cluster: Retail and Customer Relations

  Career Majors: marketing, advertising, food service and hospitality, travel and tourism

  This cluster would build upon existing courses and emphasize occupations that require customer interaction. Potential employer partners include discount stores, hotels and motels, restaurants, retail establishments.

- Cluster: Transportation Technology

  Career Majors: auto mechanics, collision repair, agricultural machinery repair, aviation

  This cluster would expand upon existing courses in auto mechanics and collision repair technology to include diesel mechanics, marine mechanics, agricultural mechanics, and aviation mechanics. Potential employer partners include auto dealers and mechanics, agricultural equipment dealerships, truck mechanics, and aircraft mechanics and airlines.

Much work and further design needs to be invested in each of these clusters to project student interest and enrollment and to develop curriculums. The financial implications of the expanded clusters are likely to be substantial. Some of the clusters would require investments in technology and equipment. Those clusters would be the following:

- Communications and fine arts
- Construction and skilled trades
- Electrical engineering
- Finance and management (computer labs)
- Manufacturing systems
- Transportation technologies

Some of the clusters are amenable to distance education, whereas others would not be. Hands-on instruction would be more appropriate for the latter. Establishing curriculums and distance

learning equipment access for the clusters for which it is appropriate could be a substantial financial burden as well. The clusters that could make use of distance education would be the following:

- Allied health systems (core classes)
- Communications and fine arts (networking fields)
- Electrical engineering
- Finance and management
- Retail and customer relations (core classes)

In closing, I believe that a well-planned, collaborative investment by the educational districts in Lenawee County in a restructured system would payoff handsomely in terms of student benefits and economic benefits to the county. It will build on an already strong system. It will provide tremendous educational and career advantages to students, and it will send a signal to potential employers that Lenawee County is serious about providing a skilled, knowledgeable work force.

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